

WHAT IS CLAIMED IS:

1. A display module of a liquid crystal display (LCD) device, comprising:

a rear case ;

5 a backlight assembly formed by depositing and fixing a reflector plate, a light guide plate, and a series of sheets onto a mold frame where a lamp assembly receiving portion, a gate PCB receiving portion, and a source PCB receiving portion are integrally formed;

an LCD panel module having an upper panel, a lower panel coupled to the upper panel with a liquid crystal layer inserted therebetween, a gate PCB electrically connected to
10 an end portion of said lower panel, and a source PCB electrically connected to another end portion of said lower panel and having a conductive pattern for an electric signal to be applied to an inverter;

a main chassis that defines an active screen area of said LCD panel module and couples the mold frame and said LCD panel module to said rear case; and

15 a front case coupled to said main chassis and covering a whole surface of said LCD panel module excluding said active screen area.

2. The display module according to Claim 1, wherein the source PCB and the gate PCB of said LCD panel module are directly and electrically connected by a board-to-
20 board method.

3. The display module according to Claim 2, wherein a first connector for connecting the gate PCB and the source PCB is formed in a predetermined area of the gate PCB and a second connector for connecting the gate PCB and the source PCB is formed in an area of the
25 source PCB corresponding to the first connector, the first and second connectors are coupled

so as to be electrically connected.

4. The display module according to Claim 3, wherein the first and second connectors are coupled in such a manner that the second connector is being positioned
5 under the first connector.

5. The display module according to Claim 1, wherein the source PCB of the LCD panel module and the inverter are directly and electrically connected by a board-to-board method.

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6. The display module according to Claim 5, wherein the inverter has at one of its end portion a first connector for connecting to the source PCB, and the source PCB has at its portion corresponding to the first connector a second connector for connecting to the source PCB, the first and second connectors being coupled so as to be electrically
15 connected.

7. The display module according to Claim 6, wherein the first and the second connectors are coupled in such a manner that the second connector is being positioned under the first connector.

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8. The display module according to Claim 1, wherein the source PCB is electrically connected to the lower panel using a flexible printed circuit (FPC) inserted therebetween, and a source driver IC is mounted onto a rear surface of the FPC.

25 9. The display module according to Claim 8, wherein the

gate PCB is electrically connected to the lower panel using a flexible printed circuit (FPC) inserted therebetween, and a gate driver IC is mounted onto a front surface of the FPC.

10. The display module according to Claim 1, wherein the
5 source PCB has a coupling hole for grounding and fixing the source PCB onto a rear surface of the mold frame.

11. A display module of a liquid crystal display device, comprising:
a rear case shaped as a four-cornered container having sidewalls on each of its four
10 edges;
a backlight assembly formed by depositing and fixing a reflector plate, a light guide plate, and a series of sheets onto a mold frame having a lamp assembly receiving portion, an inverter supporting bar for supporting an inverter, a gate PCB receiving portion and a source PCB receiving portion integrally formed at its right, left, upper, and lower edges;
15 an LCD panel module having an upper panel, a lower panel coupled to the upper panel with a liquid crystal layer inserted therebetween, a gate PCB electrically connected to an end portion of the lower panel, and a source PCB electrically connected to another end portion of the lower panel adjacent to the end portion of the lower panel;
a main chassis that defines an active screen area of said LCD panel module and
20 couples the mold frame and said LCD panel module to said rear case; and
a front case coupled to the main chassis and covering a whole surface of the LCD panel module excluding the active screen area.

12. The display module according to Claim 11, wherein the inverter supporting
25 bar has at its upper surface an insertion protrusion.

13. The display module according to Claim 12, wherein the inverter has at a portion corresponding to the insertion protrusion through a hole.

5 14. The display module according to Claim 11, wherein the inverter has at a portion corresponding to the inverter supporting bar a guide groove formed in its widthwise direction.

15 15. The display module according to Claim 11, wherein the inverter is supported by the inverter supporting bar so that components of the inverter face the rear case.

16. The display module according to Claim 11, wherein the gate PCB receiving portion of the mold frame has a plurality of windows surrounded by sidewalls and separated by separating walls and accommodating components of the gate PCB.
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17. The display module according to Claim 11, wherein an FPC for electrically connecting the lower panel and the source PCB is bent by 180 degrees so that the source PCB is fixed onto a rear surface of the mold frame.

20 18. The display module according to Claim 17, wherein the mold frame has at its lower edge of a rear surface a driver IC receiving groove for accommodating a driver IC mounted on the FPC.

19. The display module according to Claim 11, wherein the mold frame has at its
25 bottom surface a supporting plate, which removed a portion corresponding to the source

PCB.

20. A display module of a liquid crystal display device, comprising:

5 a rear case shaped as a four-cornered container having sidewalls on each of its four edges;

a backlight assembly formed by depositing and fixing a reflector plate, a light guide plate, and a series of sheets onto a mold frame having a lamp assembly receiving portion, an inverter supporting bar, a gate PCB receiving portion and a source PCB receiving portion at its right, left, upper, and lower edges;

10 an LCD panel module having an upper panel, a lower panel coupled to the upper panel with a liquid crystal layer inserted therebetween, a gate PCB electrically connected to an end portion of the lower panel, and a source PCB electrically connected to another end portion of the lower panel adjacent to the end portion of the lower panel and having a conductive pattern for an electric signal to an inverter;

15 a main chassis that defines an active screen area of the LCD panel module and couples the mold frame and the LCD panel module to the rear case; and

a front case coupled to said main chassis and covering a whole surface of said LCD panel module excluding said active screen area.

20 21. The display module according to Claim 20, wherein the rear case has at both of its end portions of a lower edge hinge receiving portions.

22. The display module according to Claim 20, wherein the rear case has a bottom surface corresponding to the lamp assembly, the gate PCB, the source PCB, and
25 the inverter deposited with an insulating material.

23. The display module according to Claim 22, wherein the insulating material includes an insulating tape.

5 24. The display module according to Claim 20, wherein the rear case is made up of a magnesium alloy.

25. The display module according to Claim 20, wherein the rear case has at a bottom surface a plurality of bosses for fixing the main chassis.

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26. The display module according to Claim 20, wherein the rear case has at its upper and lower walls a plurality of guide walls formed spaced apart from each other and toward an inner side from the upper and lower walls at irregular intervals, and the size defined by the guide walls is the same as that of the mold frame.

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27. The display module according to Claim 20, wherein an electric signal is transmitted from a main body of a computer to the source PCB of the LCD panel module via an FPC for connecting the source PCB and the main body.

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28. The display module according to Claim 27, wherein the FPC for connecting the source PCB and the main body has a center portion in lengthwise direction wound rotatably to an FPC holder that is fixed to a hinge.

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29. The display module according to Claim 27, wherein the FPC is connected to

the source PCB by inserting one of its end into a terminal block mounted on the source PCB, and also is connected to the main body through the other end.

30. The display module according to Claim 20, wherein the main chassis is
5 shaped as a four-cornered container having sidewalls on each of its four edges, and has a plurality of coupling holes that correspond to a plurality of bosses formed integrally with the rear case along the edges.

31. The display module according to Claim 30, wherein the main chassis has at
10 its center portion a window for the active screen area.

32. The display module according to Claim 30, wherein the main chassis has a size to such an extent that a predetermined space is provided between the sidewalls of the main chassis and said sidewalls of the rear case when the main chassis is fixed to the rear
15 case.

33. The display module according to Claim 30, wherein at least one of the coupling holes of the main chassis is connected to the boss of the rear case via a tab of the mold frame.
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34. The display module according to Claim 30, wherein the main chassis is made up of a stainless steel.

35. The display module according to Claim 20, wherein said front case is shaped
25 as a four-cornered container having sidewalls on each of its four edges, and has at a

center portion a window for the active screen area.

36. The display module according to Claim 35, wherein said front case has at its rear surface protrusions to be fixed into coupling grooves formed at a sidewall of the main chassis.

37. The display module according to Claim 35, wherein said front case has at a predetermined position corresponding to a hinge receiving portion of said rear case a hinge cover portion.

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38. The display module according to Claim 20, wherein the lamp assembly receiving portion has fixing ribs for fixing a lamp wire formed alternately at facing edges of said lamp assembly receiving portion, and a reinforcement rib for reinforcing said lamp assembly receiving portion formed at a position where another lamp wire escapes from said lamp assembly receiving portion.

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39. A method for assembling a display module, comprising the steps of:

mounting an LCD panel to a backlight assembly formed through an additional step by depositing a reflector plate, a light guide plate, and a series of sheets onto a mold frame, and fixing a source PCB of the LCD panel onto a rear surface of the mold frame by bending the source PCB;

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mounting the backlight assembly to a rear case;

mounting an inverter to an inverter supporting bar formed integrally with the mold frame;

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coupling a main chassis to the rear case so as to fix the backlight assembly and

define an active screen area; and

coupling a front case to the main chassis so as to cover a whole surface excluding the active screen area of the LCD panel.

5 40. The method according to Claim 39, wherein the source PCB and a gate PCB of the LCD panel are directly and electrically connected by a board-to-board method when the source PCB of the LCD panel is fixed to the rear surface of the mold frame.

 41. The method according to Claim 40, wherein the source PCB of the LCD
10 panel and the inverter are directly and electrically connected by a board-to-board method after the inverter is mounted to the inverter supporting bar of the mold frame.